

# ELEVATED HYDROGEN SULFIDE GAS CONCENTRATIONS IN GROUNDWATER

## H<sub>2</sub>S FACT SHEET

Michigan Department of Environmental Quality  
Water Bureau  
Drinking Water and Environmental Health Section

### What is hydrogen sulfide?

Hydrogen sulfide is a colorless, flammable gas. It smells like rotten eggs and is sometimes called hydrosulfuric acid, stink gas, or sewer gas. It is also commonly known by its chemical formula H<sub>2</sub>S.



Natural processes in the soil subsurface, like bacterial anaerobic decay, produce H<sub>2</sub>S.

### What happens to hydrogen sulfide when it is released from a groundwater well?



In the air H<sub>2</sub>S can be detected by smell at concentrations as low as 0.5 parts per billion. Concentrations at 100 parts per million or above in air cannot be detected by smell. At these higher concentrations the gas destroys the ability of the olfactory nerve to detect the gas. This makes the higher concentrations of H<sub>2</sub>S even more dangerous to human exposure, especially in confined spaces.

### How can exposure to hydrogen sulfide in a confined space affect my health?



Inhalation of excessive levels of H<sub>2</sub>S gas in a confined space can result in loss of consciousness, respiratory failure, and death.

Because H<sub>2</sub>S is heavier than air, it can accumulate in open trenches and other confined enclosures that are open at the top. Never enter a trench or confined space that has not been tested for breathable atmosphere.

### How might I be exposed to hydrogen sulfide?



Drinking water wells or groundwater sources in your area may naturally contain H<sub>2</sub>S gas.

Bathing or showering with water containing elevated H<sub>2</sub>S levels may pose a significant health risk. Elevated H<sub>2</sub>S gas concentrations, released from the water into the air from the shower spray or bath water, can accumulate in an unventilated bathroom.

### How can I find out how much H<sub>2</sub>S is in my well water?



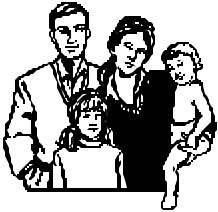
H<sub>2</sub>S testing has never been included in a routine test conducted for water supply approval. It is recommended that owners of property located in areas where groundwater is known to contain H<sub>2</sub>S sample their drinking water wells as soon as possible. Samples should be collected at a time that reflects typical household water use. Avoid collecting water samples after extended lack of well water use, such as following a vacation, or after periods of heavy water use, like lawn watering or laundry. Have one or more additional water samples tested on different days to confirm the H<sub>2</sub>S level.



# HYDROGEN SULFIDE GAS IN GROUNDWATER

Authority: Part 127, 1978 PA 368

## How can families reduce the risk of exposure to hydrogen sulfide?



If the H<sub>2</sub>S water concentration exceeds 1.3 milligrams per liter, residents should try to follow these recommendations.

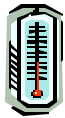
1. Reduce the length of time for showering or bathing to 10 minutes or less.



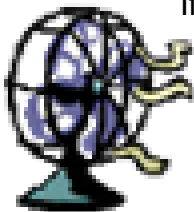
2. Reduce the water flow rate in the shower or the volume of water in the tub.



3. Because higher water temperatures cause an increase in the amount of H<sub>2</sub>S released from water, reduce the water temperature at the water heater and in the tub or shower.



4. And most importantly, **ventilate the bathroom** as much as possible by installing exhaust fans rated for maximum air exchange for the size of the bathroom, or by opening a window.



If there are small children in the home, installation of a motion sensor or other type of sensor to activate exhaust fans should be considered.

## I Am Interested In Having My Well Water Tested For H<sub>2</sub>S?

H<sub>2</sub>S testing is not routinely performed on private wells. For a nominal fee, the Michigan Department of Environmental Quality (DEQ), Laboratory Services Section (517-335-8184), or a commercial laboratory, may be contacted to arrange for H<sub>2</sub>S testing of your water supply. The DEQ fee for H<sub>2</sub>S testing is \$30. For a listing of commercial analytical laboratories, you may contact the DEQ at the telephone number listed above or this website <http://www.deq.state.mi.us/labs/>. Your local health department can also help by providing you with a list of laboratories or by making arrangements for the water testing by the DEQ Laboratory.



### FOR ASSISTANCE

Contact your county or district health department or a Department of Environmental Quality District Field Office.

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